

CLAIMS

What is claimed is:

- 1 1. A communication system for use with a transmitter that transmits optical infrared
2 signals, the communication system comprising:
3 an infrared receiver employing an array of at least two photo-sensors that combine to
4 detect the optical infrared signals within a solid angle, and
5 each photo-sensor within the array of photo-sensors detects optical infrared signals within
6 a predetermined portion of the solid angle.
- 1 2. The communication system of claim 1 wherein the infrared receiver further comprises:
2 a lens assembly for focusing the optical infrared signals onto the array of photo-sensors.
- 1 3. The communication system of claim 2 wherein the lens assembly employs a lens having
2 an imperfect focus.
- 1 4. The communication system of claim 1 further comprising:
2 filter circuitry coupled to each of the at least two photo-sensors, the filter circuitry
3 filtering optical infrared signals falling below a predetermined threshold frequency value.
- 1 5. The communication system of claim 4, further comprising:
2 an output summing circuitry that receives and sums unfiltered optical infrared signals.
- 1 6. The communication system of claim 4 wherein each photo-sensor provides an output
2 signal corresponding to the received optical infra-red signal, further comprising:
3 a programmable gain circuitry coupled to each photo-sensor that amplifies the output
4 signal of each photo-sensor.

1 7. The communication system of claim 6 wherein the programmable gain circuitry may
2 dynamically adjust the amount of gain.

1 8. The communication system of claim 6, further comprising:
2 analog to digital converter circuitry coupled to the programmable gain circuitry for
3 converting the output(s) of the programmable gain circuitry to digital signals.

1 9. The communication system of claim 8, further comprising:
2 a photo-sensor selection control circuit coupled to the analog to digital converter, the
3 photo-sensor selection control circuitry determining whether a given photo-sensor signal meets a
4 predetermined pulse width and frequency criteria and, if not, causing the given photo-sensor
5 signal to be suppressed.

1 10. The communication system of claim 1 wherein the array of photo-sensors is one
2 dimensional.

1 11. The communication system of claim 1 wherein the array of photo-sensors is multi-
2 dimensional.

1 12. The communication system of claim 1 operating in a half duplex serial mode with a range
2 of at least one meter.

1 13. The communication system of claim 1 operable at solid angles from zero to
2 approximately thirty degrees.

1 14. A method for capturing optical infrared signals within a solid angle, the method
2 comprising:

3 providing a photo-sensor array having at least two photo-sensors;
4 detecting, by each photo-sensor within the photo-sensor array, optical infrared signals
5 only within a predetermined portion of the solid angle; and
6 converting the optical infrared signal into corresponding electrical signals.

1 15. The method of claim 16, further comprising filtering the optical infrared signals that are
2 below a predetermined threshold.

1 16. The method of claim 14, further comprising:
2 providing a lens for directing the optical infrared signals to the photo-sensor array.

1 17. The method of claim 16, wherein the lens is a diffused lens having an imperfect focus.

1 18. An infrared receiver that detects optical infrared signals, the infrared receiver comprising:
2 a photo-sensor array comprising a plurality of photo-sensors, each photo-sensor receiving
3 optical infrared signals within a predetermined portion of a solid angle and converting received
4 optical signals to electrical signals; and
5 a signal selection circuitry coupled to the photo-sensor array, the signal selection circuitry
6 selectively outputting corresponding electrical signals based on predetermined criteria.

1 19. The infrared receiver of claim 18, wherein the predetermined criteria is a pulse frequency
2 threshold.

1 20. The infrared receiver of claim 18, wherein the predetermined criteria is a power
2 threshold.

1 21. The infrared receiver of claim 18 further comprising an optical system arranged to direct
2 optical infrared signals to the photo-sensor array.

1 22. The infrared receiver of claim 18 wherein the array of photo-sensors detects signals
2 operating within a signaling rate of 9.6kb/s through 4mb/s.

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